REMARKS

In the final Office Action mailed May 5, 2003, the Examiner noted that claims 5 and 11-22 were pending, allowed claim 5, and rejected claims 11-22. Claims 12 and 22 have been amended, new claim 23 has been added and, thus, in view of the forgoing claims 5 and 11-23 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

For the record, the undersigned telephoned Examiner Wong, to try and schedule an interview in this case. Examiner Wong would not schedule the interview. Examiner Wong indicated that it was the policy of his supervisor, SPE Kelly, not to have an interview after a final Office Action. This policy appears to be contrary to the policy of the USPTO. See MPEP section 713.09 - Finally Rejected Application - "Normally, one interview after final rejection is permitted. ... A second or further interview after a final rejection may be held if the examiner is convinced that it will expedite the issues for appeal or disposal of the application." The undersigned requests an explanation of the basis for not following the stated policy of the USPTO.

On page 2 of the Office Action the Examiner rejected claims 11-22 under 35 U.S.C. § 102 as anticipated by Lynch.

Clarification of the rejection is requested for the following reasons.

Lynch is directed to a system that is trying to derive the motion vectors for a block in a B frame where the B frame is in between two anchor frames I and P using an area overlap method. The Examiner admits that: "As noted in figure 17, Lynch discloses that there are two frame memories, elements 52 and 53, for storing current frame data and previous frame data. Then, one takes the difference data or non-uniform image data between the current frame data and the previous frame data to obtain a motion vector." This comment appears to be about the prior art discussed with respect to Lynch figure 13 and not with respect to figure 17 of Lynch. The Examiner is requested to clarify the support in Lynch for the above-noted statement.

In the Action the Examiner appears to allege that the VLD 98 (see figure 17) of Lynch is a motion vector decoder or an accuracy determination device (see Action pages 3 and 4). This is not the case. As stated by Lynch:

> FIG. 13, prior art, shows the block diagram of the decoder for the independent search method IS. An input means 97 receives the bit rate reduced signal and supplies it to a variable length decoder (VLD) 98. The VLD separates the block data into essentially four types of information: video data in the form of quantized DCT coefficients, forward motion vectors FMv, backward motion vectors BMv, and mode information.

(See Lynch, col. 9, lines 30-37).

As can be seen from the above text of Lynch, the VLD separates and does not predict accuracy or decode motion vectors. The Examiner is requested to clarify the foundation for the rejection.

In the Action on page the Examiner particularly appears to equate mode information with encoding of a motion vector. This is also not the case. As sated by Lynch:

> One or both of the motion vectors derived as just described may be sent to the VLC 63 for coding based on a decision made by the motion compensator 68 in a manner illustrated in FIG. 12, prior art. The selection made is called a mode, and a signal indicating the mode is sent via a line M to the VLC 63 for encoding. The B frames are not transmitted, but they are reconstructed at a decoder from one or both of the anchor frames by using the motion vectors in accordance with the mode signal. Thus, if the mode signal indicates that the matching block in P.sub.3 gives best results, that matching block is used. If the matching block in I0 is best, it is used, and if a combination of blocks produces the best results, the combination is used. This in done on a block by block basis so that different modes may apply to different blocks.

(See Lynch, col. 8, lines 5-20)

As can be seen from the above text of Lynch, the mode is a selection indicator indicating the best block. The mode is not a coding mode as alleged by the Examiner. The Examiner is requested to also clarify this foundation for the rejection.

The teachings of Lynch with respect to figure 17 are directed at a method of selecting a motion vector for a block that is based on the determination of data or area overlap (AO) of predefined uniform size and position blocks. This overlap method can be used for unidirectional or bi-directional (forward/backward) prediction. In the overlap method, a predefined size motion block (MB) of a P frame is projected toward an I frame passing through an in-between B frame. The B frame is also divided into blocks of the uniform size and position. The intersection between the projected block and the blocks of the B frame is determined. Then, the area of overlap (AO) between the projected motion block (MB) and the blocks of the B frame that are intersected is determined. The motion vector of the block of the P frame is assigned to the motion block (MB) of the B frame that has the most area overlap (AO). The assigned motion vector is scaled to take into account the position of the B frame between the P and I frames. The text of Lynch describes this process in more detail starting at col. 5, line 7 with respect to figures 6-10.

With respect to the particular teachings of Lynch figure 17, the decoder 98 produces both forward and backwards motion vectors. The forward vector motion vector is supplied through a delay memory 110 to the area overlap (AO) motion vector (Mv) calculator 111. This calculator calculates which forward motion vector has the most overlap as discussed above and outputs a selection signal. The forward and backward motion vectors are also supplied to displacement

units 104 and 105. The selection signal from the area overlap (AO) calculator 111 is used to select a forward and backward motion vector output by the displacement units 104 and 105. A switch 57 is controlled by a pre-selected prediction mode (forward, backward or interpolation - see col. 1, line 54 - col. 2, line 19). Depending on the prediction mode the switch 57 selects between the motion vector output of the forward displacement unit 104, the backward displacement unit 105 and the interpolated motion vector output by adder 58. The selected motion vector prediction is added to a residue by adder 51 and output on line 59.

Lynch also discusses a prior art independent search (IS) method with respect to figure 13 (see col. 9, line 30+ and also col.1, line 54+). This method determines matching blocks by using the mean square error (MSE) to find the block with least MSE for which the motion vector is transmitted. The MSE uses the differences between the corresponding pixels of a target block and compared blocks that reside in different frames.

The operation of Lynch (and the prior art discussed by Lynch) is very different from that of the present invention in a number of ways as discussed below.

The present invention predicts a motion vector for a particular target block from motion vectors of blocks adjacent to the target block in the same frame. This is very different from the selection of a vector projected from a P frame for a block in a B frame based on overlap of a block projected from the P frame to the B frame as in Lynch. The present invention emphasize this frame distinction in claims 12 and 22. As recited in these claims the present invention and Lynch operate in very different ways and are directed to very different methods of predictive encoding/decoding that could be considered not even the same areas of technology.

The present invention selects a decoding method by using the accuracy or non-uniformity of the motion vectors of the adjacent block in the same frame. This non-uniformity or accuracy is discussed in the present application starting on page 19 and particularly starting on page 28 with respect to figure 12. This feature is emphasized in the claims. For example, claims 11, 12, 20 and 21 recite "... determining means for determining accuracy of a prediction made by said predicting means based on the degrees of non-uniformity of the plurality of motion vectors... ." Claim 13 recites a similar action. As discussed above, there is no discussion in Lynch of using accuracy or non-uniformity but merely of selecting a vector based on area coverage (or MSE in the case of the prior art discussed in Lynch).

In the present invention, the accuracy or non-uniformity discussed above is based on determining whether differences between any of the vectors is greater than a threshold. This is particularly discussed starting on page 28 of the application with respect to figure 12. This is

very different from the selection of a motion vector for a block based on area overlap (or MSE) as discussed in Lynch. This distinction is emphasized in claims 12 and 22. The present invention and Lynch operate in very different ways with respect to this issue.

The present invention determines accuracy or non-uniformity by calculating the absolute value of the differences between all of the motion vectors for the adjacent blocks, then compares these absolute values to a threshold value and if any of the absolute values are greater than the threshold, the vectors are not uniform and the prediction is not accurate thus requiring the selection of a more detailed decoding. This is particularly discussed starting on page 28 of the application with respect to figure 12. This is very different from the selection of a motion vector for a block based on area overlap as discussed in Lynch. This distinction is emphasized in new claim 23.

It is submitted that the present claimed invention patentably distinguishes over Lynch and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, dependent claims 14-16 emphasize accuracy predictions made on vectors already decoded for in an area adjacent to the block. Lynch does not teach or suggest this. It is submitted that the dependent claims are independently patentable over the prior art.

It is submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 11/5/3

By: _____
J. Randall Beckers
Registration No. 30,358

1201 New York Ave, N.W., Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501